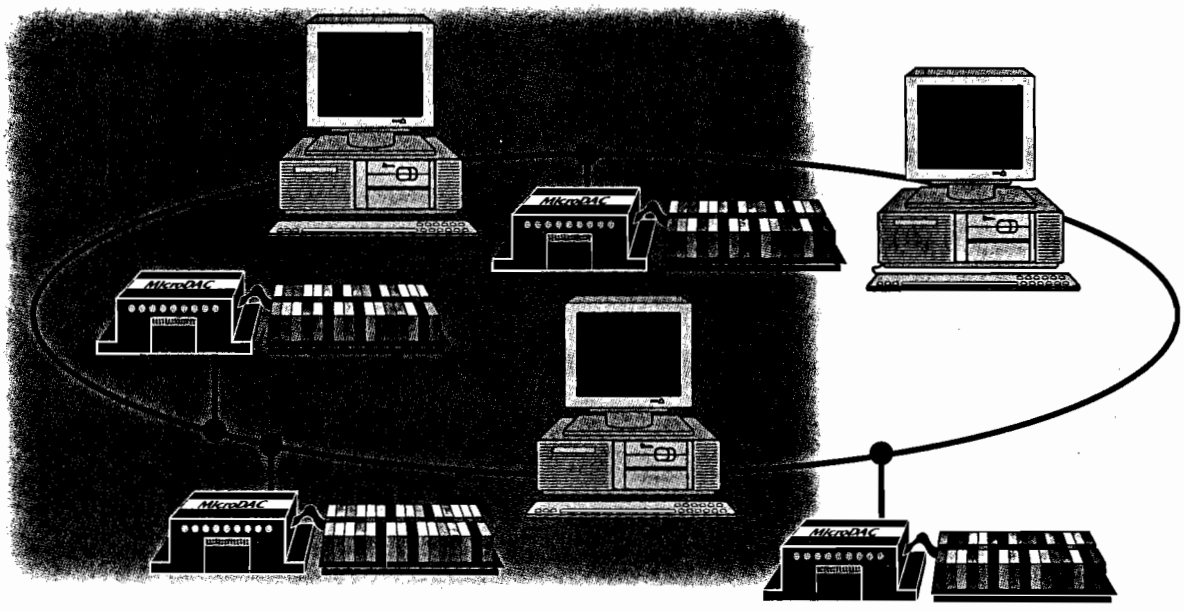
# ARCNET® for MicroDAC... hurry, pass it on




## MicroDAC Digital/Analog Controller Achieves High Speed Peer-to-Peer Communications via ARCNET

Take distributed control to a new level of performance! Now you can network multiple MicroDAC controllers and multiple PCs on an ARCNET LAN. ARCNET's token-passing protocol allows each MicroDAC to take control in turn. You get true multimaster, peer-to-peer communications.

Previous networks limited MicroDAC to master/slave communications with the host PC. Now each MicroDAC can execute data acquisition and control with greater independence. MicroDAC even takes on functions which previously required a PC.

Grayhill's MicroDAC ARCNET Kits make it easy. You get an interface board, manual, and easy-to-use network software. Best of all, the way you operate the MicroDACs does not change. No rewriting of application programs is necessary. The upgrade is easy!

For information circle 74

Features:

- Speedy Communications at 2.5 Mb/sec
- Network via Fiber Optics, Coax, or Twisted Pair Cabling
- Broadcast Messages to All Addresses Simultaneously
- No Need for PC to "Poll" MicroDACs
- Encapsulates Standard MicroDAC Commands in an ARCNET Packet
- Supports Intermixed Digital and Analog I/Os
- Robust Communications for Electrically Noisy Environments
- Allows Back-Up Redundancy of MicroDACs and/or PCs
- Battery-Backed Data Storage
- Real-Time Clock
- Low Cost/High Performance

Call for free information

Phone, fax or E-mail us for technical data on our new MicroDAC ARCNET kit. It's the boost in communication, speed, capability and noise-resistance you've been seeking.

ARCNET ® is a registered trademark of Datapoint Corporation.


Grayhill INC.

**An ISO-9001 Company**

561 Hillgrove Avenue
P.O. Box 10373
LaGrange, Illinois 60525-0873 USA
Phone: 708/354-1040
Fax: 708/354-2820
CompuServe: 72427,1560
Internet: TroyAllenC@AOL.com

# RS-485 repeater extends standard's reach

Mitchell Lee, Linear Technology Corp, Milpitas, CA

RS-485 specifies communications for distances up to 4000 ft. This limit is the consequence of losses in the twisted pair used to carry the data. Beyond 4000 ft, skin effect and dielectric losses take their toll, attenuating the signal beyond use.

**Fig 1** shows a simple RS-485 repeater. Two RS-485 transceivers connected back-to-back relay incoming data from either side. A pair of cross-coupled one shots control the data flow so that only one transmitter turns on at a time.

A 1-to-0 transition at the output of either idling receiver signifies incoming data. The first receiver to spot such a transition triggers its associated one shot, which, in turn, activates the opposite transmitter to ensure smooth data flow from one side of the repeater to the other. At the same time, the one shot locks out the other receiver/transmitter/one-shot combination, so that only one data path is open.

Successive 1-to-0 transitions and start bits retrigger the one shot, holding the data path in its present configuration. Set the one shots' time constants slightly greater than the interval between any two start bits.

When received data stops arriving, the previously active line idles high, producing a 1 at the receiver's output. The one shot resets, returning the opposite transceiver to the receive mode—ready for any subsequent data flow in either direction.

The software protocol must wait one word length after the end of any data transmission before responding to a call or initiating a new conversation to allow adequate time for the one shots to reset. The repeater in **Fig 1** handles 100-kbps data rates and a 8-bit word length, plus start and stop bits. (DI #1421)

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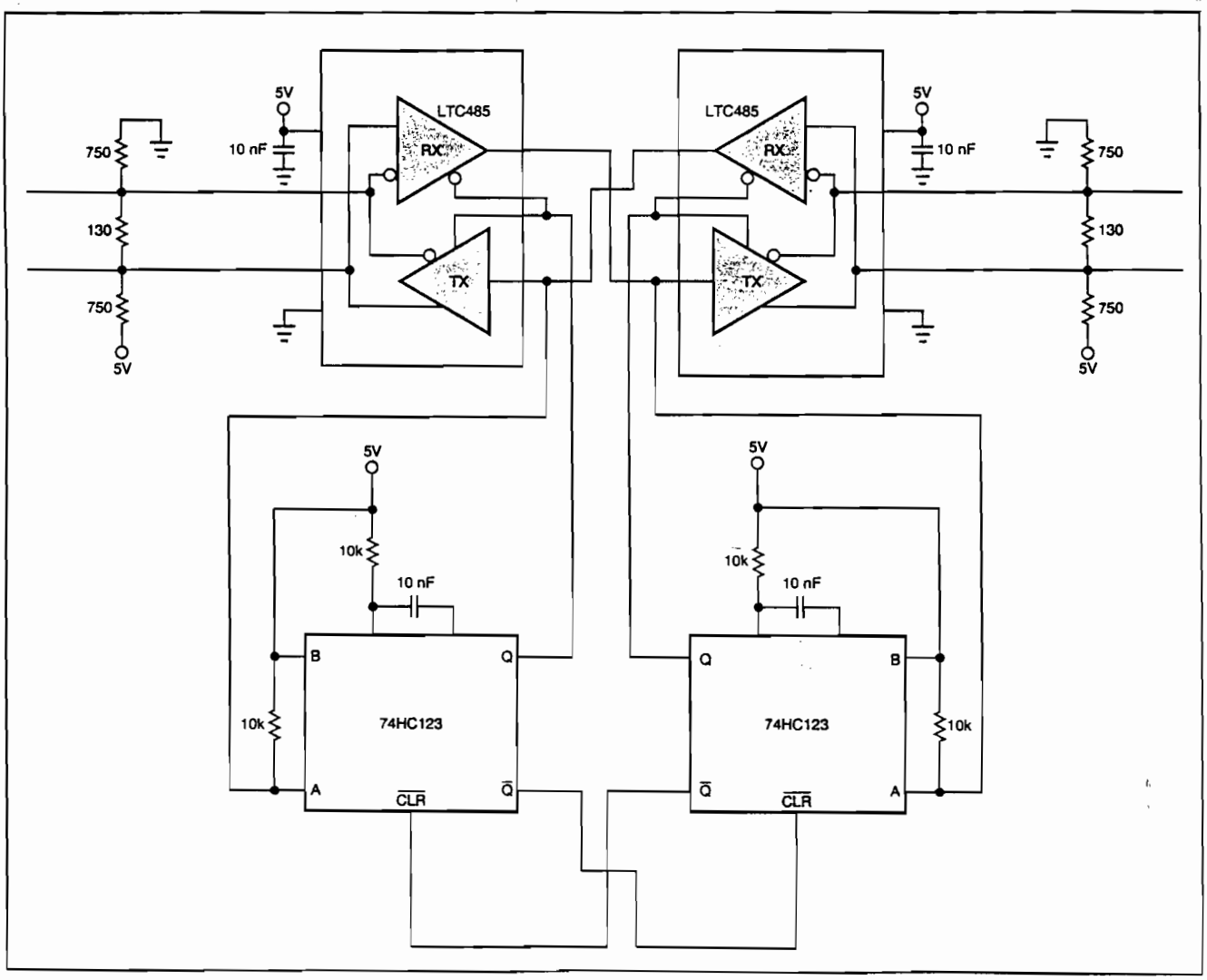


**Fig 1—This simple RS-485 repeater can compete with μP-based repeaters if you set up your software protocol properly.**